



ACUSON Sequoia 512 Ultrasound Platform

Advancing the science of ultrasound

Acuson, The Value of Vision, Sequoia, MultiHertz, Native, DELTA, KinetDx and Perspective are registered trademarks and DIMAQ, MICROSON, microCase, SST, Solo and Cadence are trademarks of Acuson Corporation.

Siemens AG Medical Solutions
Henkestrasse 127
D-91052 Erlangen
Germany
Tel: ++49 9131 84-0

www.SiemensMedical.com
www.siemensultrasound.com
www.acuson.com

Siemens Medical Solutions USA, Inc.
Ultrasound Division Headquarters
P.O. Box 7393
Mountain View, CA 94039-7393 USA
Tel: (1) 800-498-7948
From outside the USA: (1) 650-969-9112

Europe: (44) 20 8479 7950
Asia Pacific: (65) 6341 0990
Latin America: (1) 305-596-3148

Siemens **Medical**
Solutions that help

Siemens Medical Solutions USA, Inc.
Ultrasound Group
P.O. Box 7002
Issaquah, WA 98027 USA
Tel: (1) 800-477-6627
From outside the USA: (1) 425-557-8704

© 2002 Acuson Corporation
Order No. A91004-M2420-
F492-2-4A00
Printed in the USA
WS 0502 10.0 Rev. 2

SIEMENS
medical

ACUSON

Sequoia



Greater clinical impact
across all patient types



Easy-to-use
HomeBase Design



Digital Dynamic
Exam Review



One-touch TEQ™
Technology



Advanced Networking
Capabilities



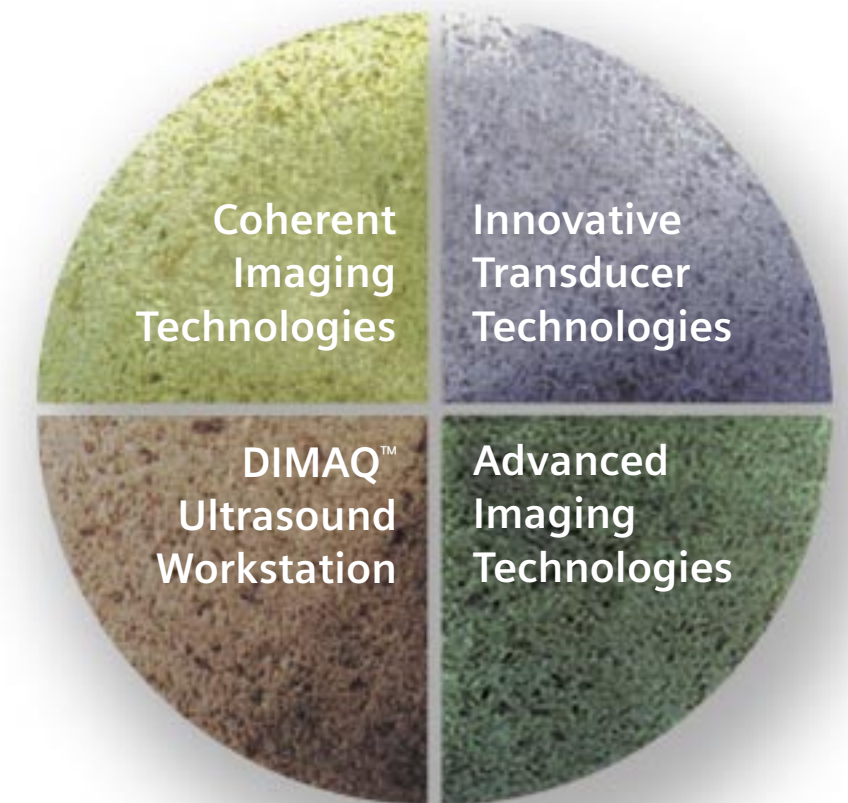
The ACUSON Sequoia® 512 ultrasound platform ushers in a new era for diagnostic ultrasound

Performance

Based on Acuson's proprietary technologies, the Acuson Sequoia 512 platform establishes an entirely different category for ultrasound performance, with major advances in all system operations and performance modes. Its unique use of ultrasound physics will allow you to see aspects of anatomy and physiology like never before.

As the Acuson Sequoia platform sets new standards, it advances ultrasound to a new level of diagnostic confidence, with the ability to explore and expand clinical capabilities.

The unrivaled performance of the Acuson Sequoia platform is based on four technology cornerstones. To understand these technologies is to appreciate just how far this platform has advanced the science of ultrasound.



Harnessing physics in a whole new way

Acuson's proprietary Coherent Imaging Technologies have completely revolutionized the way ultrasound echoes are transmitted, received and processed. They provide an unprecedented amount of new information in every image, making it possible to see anatomy and physiology never seen before with ultrasound.

Coherent Pulse Formation marks the first time the transmitted ultrasound waveform has been precisely controlled to push the boundaries of imaging performance. Through *Precision Pulse Shaping*, exacting transmitter control is used to generate complex transmitted waveforms. Thus, imaging performance can be optimized in all applications. Coherent Pulse Formation enables Native® Tissue Harmonic Imaging and several new system capabilities, with the promise of even more advancements to come.

- **Chirp Coded Excitation** provides extraordinary penetration and resolution at high frequencies.
- **Dynamic Transmit Focus** utilizes a single transmit firing to dynamically focus the transmitted sound beam at multiple focal depths throughout the image with high frame rates.

Coherent Image Formation uses both phase and amplitude information to form an image. Subtle tissue contrast differences become immediately apparent. There's more information at depth—even at high frequencies. The definitive gold standard in imaging performance results in:

- A dramatic increase in temporal and spatial resolution.
- Greater dynamic range and system sensitivity.
- Increased frame rates for better visualization of dynamic structures.

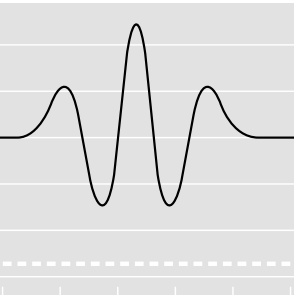
Vision



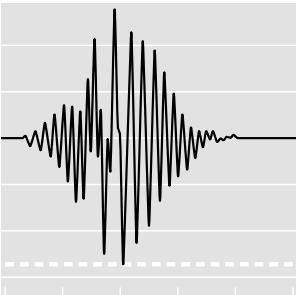
Traditional ultrasound systems only use amplitude to form the image, and rely on phase merely to steer and focus the beam.



Coherent Image Formation uses both phase and amplitude information to form the complete image.



Standard pulse generation.



Coherent Pulse Formation provides precise control of the transmitted amplitude and phase for sophisticated image processing.



Acoustic engineering innovation —
an Acuson core competency

To tap the full potential of the Acuson Sequoia platform, many new transducer technologies have been developed. The resulting designs, using the latest acoustic ceramic materials and advanced manufacturing processes, provide increased sensitivity and resolution which yield more clinical information and expanded applications. These ergonomically-designed transducers provide easier imaging access, increased operator comfort and greater clinical impact across all patient types.

Hanafy Lens Transducer Technology provides wide-bandwidth imaging with a tightly controlled sound beam slice thickness throughout the entire imaging plane. This clearly differentiates near-field structures with higher resolution, reduces far-field beam spread and improves 3-D imaging.

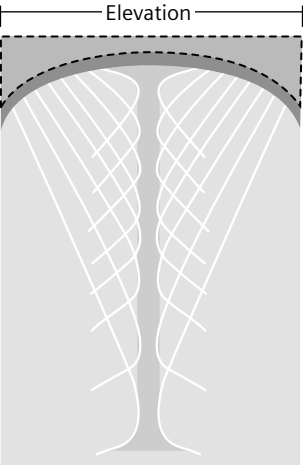
MICROSON™ High Resolution Transducers, such as the 15L8w, 15L8 and EC-10C5, provide exceptionally high resolution, as fine as 200 microns in gray scale, and highly sensitive color Doppler, enabling superb breast, musculoskeletal, small parts, and first trimester imaging.

MultiHertz® Multiple Frequency Imaging allows users to select from an expanded range of frequencies to optimize penetration and resolution in all clinical applications.

microCase™ Transducer Miniaturization Technology provides significant reduction in transducer case and cable size, optimizing ergonomic form factors.



MP Micro Pinless Transducer Connectors make hundreds of connections without pins to minimize noise and make high-frequency, high-resolution scanning truly viable.



The unique curvature of the Hanafy crystal provides continuous sound beam focusing in the elevation plane for more uniform slice thickness at all depths.

All transducers have been carefully designed for user ergonomics, providing easy imaging access for all patients across a wide range of applications.

Delivering a new level of productivity and workflow efficiency

Fully integrated into the Acuson Sequoia platform, the DIMAQ workstation offers image and data management, real-time image processing and advanced display options. Its powerful digital architecture enables storage of complete, digitally preserved exams, comprised of static and dynamic clip images and calculations. Since exams are saved in a JPEG-compressed DICOM format, accessing them is fast and easy. They can be transferred to the KinetDx® family of products or any ultrasound-compatible PACS, review workstation or web browser, at any time for efficient review at remote locations.

The DIMAQ workstation has direct access to all exam data and offers real-time image processing such as DELTA® differential echo amplification. It also enables other special applications, including:

- On-board digital image and data management
- A full suite of DICOM capabilities
- Advanced calculations
- Staged protocols for complicated exams, such as contrast agent imaging and stress echo
- Perspective® Advanced Display Option

The Perspective Option provides the foundation for existing and future applications of extended field-of-view imaging for static and dynamic studies and a wide array of 3-D imaging displays.

A new level of workflow efficiency is achieved through the ability to easily review digital dynamic studies, capture and analyze patient data and quickly process patient reports.

Workflow



Off-line static and dynamic exam review is possible through the DIMAQ workstation incorporated within the Acuson Sequoia platform.



The DIMAQ workstation enables digital exam review, increasing department productivity and diagnostic confidence.



The Image Control function enables instant, one-touch image optimization.

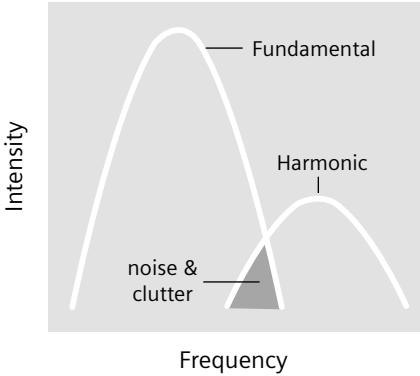
Raising the standard in imaging science

The Acuson Sequoia platform empowers clinicians to optimize image quality in every application, simply and quickly. The subtlest pathology becomes clearer. There is considerably more anatomical detail in every image. Clinicians can make diagnoses simpler, faster and with more confidence than ever before.

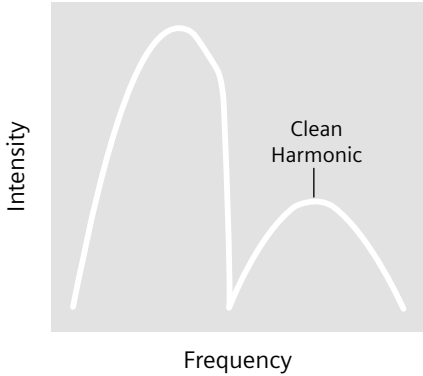
TEQ™ Technology is a sophisticated signal-processing technology that automatically equalizes tissue gain and brightness in two dimensions, providing consistent, reproducible image quality in 2-D and M-mode—all at the touch of a button. Tissue Equalization Technology is a pre-processing technology, applied to RF echo data before the image is formed. It produces consistent, high-quality studies, with more time to focus on the patient. Tissue Equalization Technology is easy to use and affords higher productivity and a dramatic reduction in inter-operator variability.



Technology



Conventional technologies do not completely separate the harmonic echoes from the fundamental echoes and clutter.



Only NTHI uses Coherent Pulse Formation for precise control of the frequency band. Tissue harmonic echoes are readily distinguished from the fundamental echo.

Native® Tissue Harmonic Imaging (NTHI) is a patented method of harmonic imaging that works by detecting subtle harmonic echoes generated within tissue while completely rejecting fundamental frequency echoes used in traditional ultrasound imaging. This essentially eliminates body wall artifacts and acoustic noise, resulting in more definitive diagnoses.

Transmit Compounding combines multiple transmitted images utilizing different ultrasound frequencies into a single, compounded image. This significantly improves contrast and detail resolution and reduces image artifacts such as speckle, noise, edge shadow and clutter. The result is better differentiation of subtle lesions and improved visualization of borders and interfaces.

Cadence™ Contrast Agent Imaging. Extensive scientific and clinical investigations worldwide indicate that the Acuson Sequoia platform is the premier system for contrast imaging. The success of Cadence contrast imaging is attributable to innovations in Coherent Pulse Formation, Tissue Equalization Technology and the digital dynamic clips enabled by the DIMAQ workstation. Acoustic energy uniformity is enhanced by means of Dynamic Transmit Focusing and proprietary Hanafy Lens Transducer technology. Cadence contrast imaging provides new methods for contrast agent detection, including extremely effective bubble preservation algorithms. Unique emission technologies allow clinicians to display the tissue image, the contrast-agent-only image, or both together—all from the same acquisition dataset.

SST™ Color and Solo™ Spectral Doppler. The unique architecture of the Acuson Sequoia platform sets a new standard for Doppler sensitivity and resolution. SST Color Doppler utilizes multiple beamformers to produce images with high spatial resolution, high frame rates and unprecedented sensitivity to low flow. Solo Spectral Doppler uses a dedicated audio beamformer to achieve a new degree of sensitivity and clarity with superb low flow detection and increased penetration for detection of deep flow dynamics.

ACUSON

For nearly two decades, Acuson has applied a unique philosophy to the practice of ultrasound. This way of thinking has led to an unsurpassed history of technology breakthroughs. It also explains why our platforms have always set the gold standard for imaging performance and upgradeability.

Total investment protection is the basis of this philosophy. The principal goal is to ensure that every system delivered meets your clinical needs, now and in the future. This is why the Acuson Sequoia platform was designed from the beginning with a long-term upgrade strategy. Its flexible core architecture anticipates future performance improvements, which will increase system capability and expand clinical utility.

The Acuson Sequoia platform also takes digital connectivity to an entirely new level. No other platform provides for such efficient, cost-effective transfer of patient information.

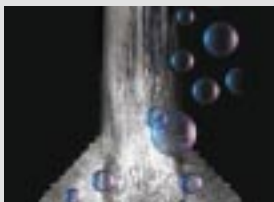
Our commitment to the future, to advancing the science of ultrasound, explains why our platforms have proven to be the best long-term investment in ultrasound. That's the Value of Vision. And as a Siemens Company, that vision forms part of a comprehensive, integrated medical solution that's enhancing the quality of patient care worldwide.



Gold standard performance



TEQ™ technology:
Consistent, reproducible image quality



Cadence Contrast Imaging: Superior contrast detection sensitivity



KinetDx Solutions:
Integrating ultrasound into the electronic medical environment

Sequoia

